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# A Taxonomic Revision of the Japanese Species of the Genus *Pselaphogenius* (Coleoptera, Staphylinidae, Pselaphinae) Part 3, Species from Central Honshu

By

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ハネカクシ科，アリヅカムシ亜科）の分類学的再検討. 第3部 本州中部

## Introduction

In the central area of Honshu including Tôhoku, Kantô and Chûbu districts, a small number of species of the genus *Pselaphogenius* have been known. *P. uncifer* was described by Tanokuchi (1981). It distributes in Tôhoku to Kantô districts and is the northernmost member of the genus. *P. orientalis* described by Besuchet (1961) from Yamanaka, Mishima City, Shizuoka Prefecture has been little known as regards its distributional range. *P. tridentatus* is known from the high altitudinal area of central Honshu (K. Sawada, 1969). The distributional ranges of *P. uncifer* and *P. tridentatus* were revised twice by Nomura (1996, 1998b). Nomura (1998b) suggested that these two species are altitudinally segregated in their ranges.

In this paper, these species are taxonomically revised. It is concluded that *P. uncifer* is a junior synonym of *P. orientalis*, and its distribution is demarcated. *P. orientalis* and *P. tridentatus* including two subspecies are redescribed with notes on their geographical variations. Additionally, a new species collected from Mt. Takaosan, Tokyo Metropolis is described. The distributional ranges of these three species are discussed from the biogeographical viewpoint.

## Methods

The measurement utilized in the present study is the same as that of Nomura (1998a), namely, body length is represented by a total of the cephalic, elytral and abdominal lengths. The head length is measured from the anterior margin of the frons to the occipital constriction, and the abdominal length is from the basal to apical margins of the fourth tergite, because of fluctuation in length of the fifth to eighth segments with condition of material, for example, wet, dry, teneral or mature. Terminology of

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the elytral structure and chaetotaxy defined by Nomura (2002) is adopted to the description of the elytra in the part of *P. katsuyukii*.

In the parts of the specimens examined and records in literature, altitudes of collecting sites measured by collectors or authors are shown without parenthesis. In the case that altitude is uncertain, the altitude inferred from map is parenthesized like (ca. 300m alt.). The member(s) of the Soil Animal Surveying Group of Tochigi (Tochigi-ken Dojô-dôbutsu Chôsa Kenkyûkai) as the collector(s) are abbreviated as SAST.

### Systematics

#### *Pselaphogenius orientalis* Besuchet

[Japanese name: Kagi-higenaga-arizukamushi]

*Pselaphogenius orientalis* Besuchet, 1961, Mitt. schweiz. ent. Ges., 34: 39; Nomura, 1989, Check List Jpn. Ins., Fukuoka, [1]: 292; Besuchet, 1999, Revue suisse Zool., 106: 62.

*Pselaphogenius uncifer* Tanokuchi, 1981, Kontyû, Tokyo, 49: 351; Nomura, 1989, Check List Jpn. Ins., Fukuoka, [1]: 292; Besuchet, 1999, Revue suisse Zool., 106: 62. **Syn. nov.**

**Male.** Length 1.49–1.60 mm. Width 0.65–0.68 mm. Very similar to *debilis* and the other congeners in external structure. Head elongate, strongly constricted just behind antennae, frons weakly convex and expanded laterally, with a long U-shaped notch on anterior margin and well demarcated broad longitudinal groove, vertex gently convex, with a pair of round dorsal tentorial pits just inside eyes, a shallow concavity around pits and a shallow and indistinct longitudinal groove.

Male genitalia well sclerotized and reniform; parameres nearly symmetrical, each slender and lamellar; median lobe bulbous in basal part, apical orifice truncate, with a pair of lateral processes, right process broad and rounded at apex, left process geographically varying in shape, ventral process long and well projected, sharpened and weakly curved ventrad near apex, with a large and ovoid membranous part on basi-dorsal side; endophallus various in shape, more or less narrowed and curved ventrally in apical part.

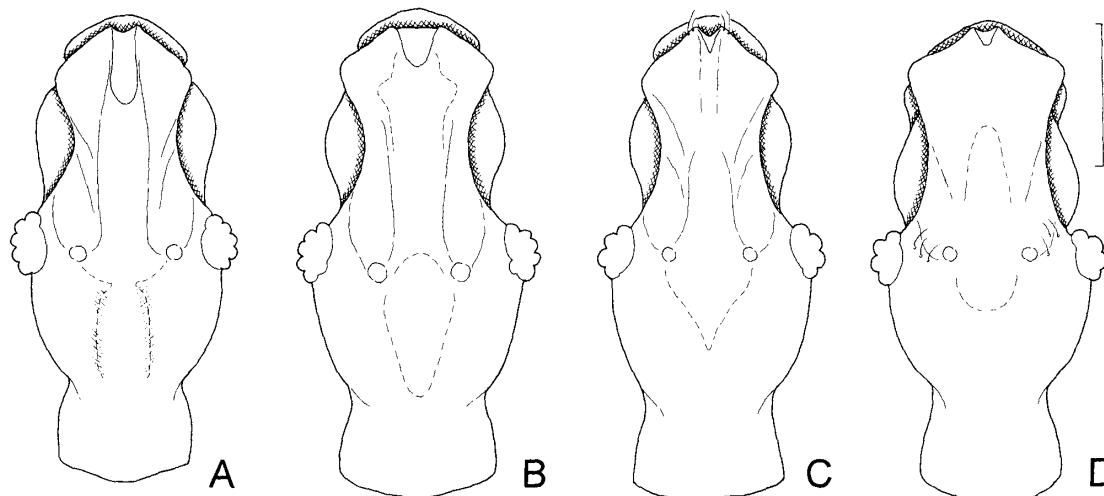


Fig. 1. Heads of *Pselaphogenius* spp. A, *P. orientalis* Besuchet, from Hashidate, Saitama Pref.; B, *P. katsuyukii* sp. nov., from Mt. Takaosan, Tokyo Metropolis; C, *P. tridentatus tridentatus* K. Sawada, from Mt. Tsukiyomiyama, Tokyo Metropolis; D, *P. t. vicinus* K. Sawada, from Mt. Hakusan, Ishikawa Pref.

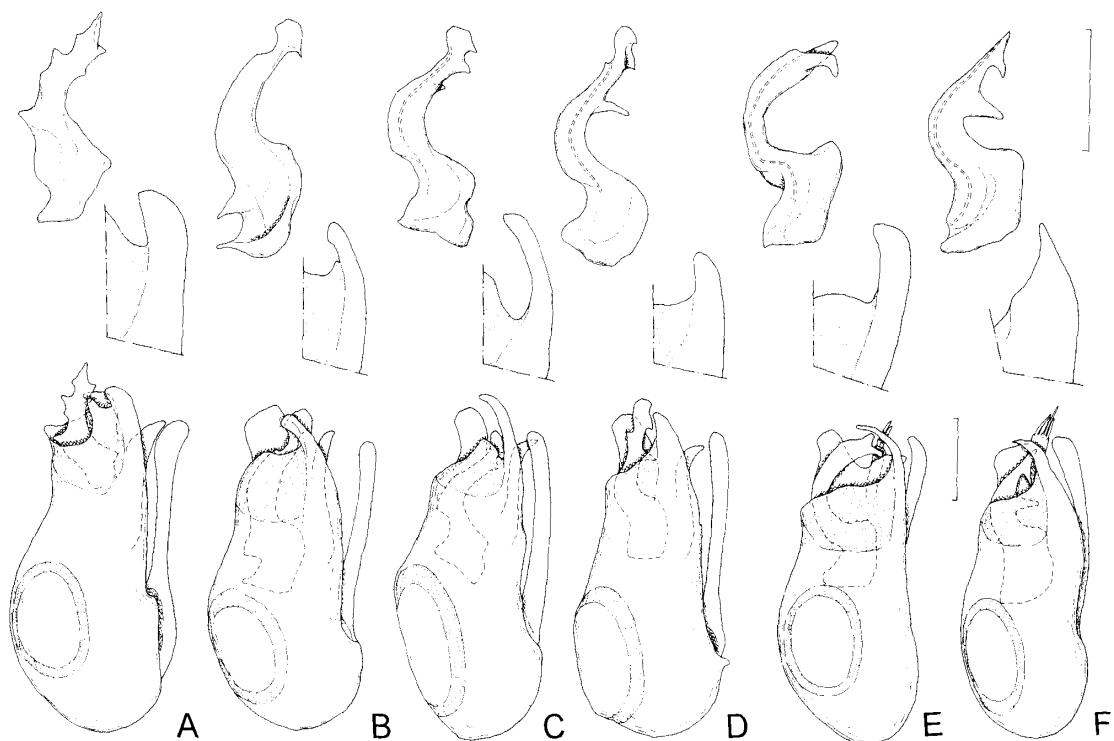


Fig. 2. Male genitalia of *Pselaphogenius orientalis* Besuchet in some localities (above, endophallus; middle, left apex of median lobe in lateral view; below, median lobe and parameres in dorsolateral view). A, Akane, Fukushima Pref.; B, Urushino-sawa, Tochigi Pref.; C, Mt. Tsukubasan, Ibaraki Pref.; D, Mt. Akagiyama, Gunma Pref.; E, Kakkaku, Saitama Pref.; F, Kannami-Genseirin, Shizuoka Pref. Upper scale for above and middle: 0.2 mm; lower for below: 0.2 mm.

*Female*. Length 1.45–1.55 mm. Width 0.63–0.69 mm.

*Geographical variation*. In the population from Akane, Haramachi-shi, Fukushima Prefecture, which is close to the northernmost of the distributional range of this species, the left lateral process of median lobe of the male genitalia is broad and well projected and pointed at apex, the endophallus is short and rugged. In the populations from Tochigi to Ibaraki Prefectures, the left process is narrowed and dorsally projected, and the endophallus is distally narrowed, weakly broadened and bears a small denticule near the apex. The shapes of the left process and endophallus in the Kakkaku population, Ogano-machi, Saitama Prefecture are very similar to those of Tochigi and Ibaraki populations. The left process in Mt. Akagiyama population, Gunma Prefecture is less projected and curved than that in Fukushima, Tochigi and Ibaraki Prefectures. The former endophallus is similar to the latter one, except for having a large spine on the ventral side.

In the Kannami-Genseirin population, Kannami-chō, Shizuoka Prefecture, which is very close to the type locality of this species, the left process is short and sharpened, the endophallus is short and thick, acute at the apex and bears two large spines on the ventral side. In the Izu Peninsula population, the left process is broadened near apex, and then attenuated at the apex; the apical part of endophallus is extended and weakly constricted near apex, and is bispinulate on the ventral side. In the Abe Pass population, Shizuoka-shi, Shizuoka Prefecture, the left process is well projected and rounded at the apex; the apical part of endophallus is narrowed and distinctly arcuate. However the left process is

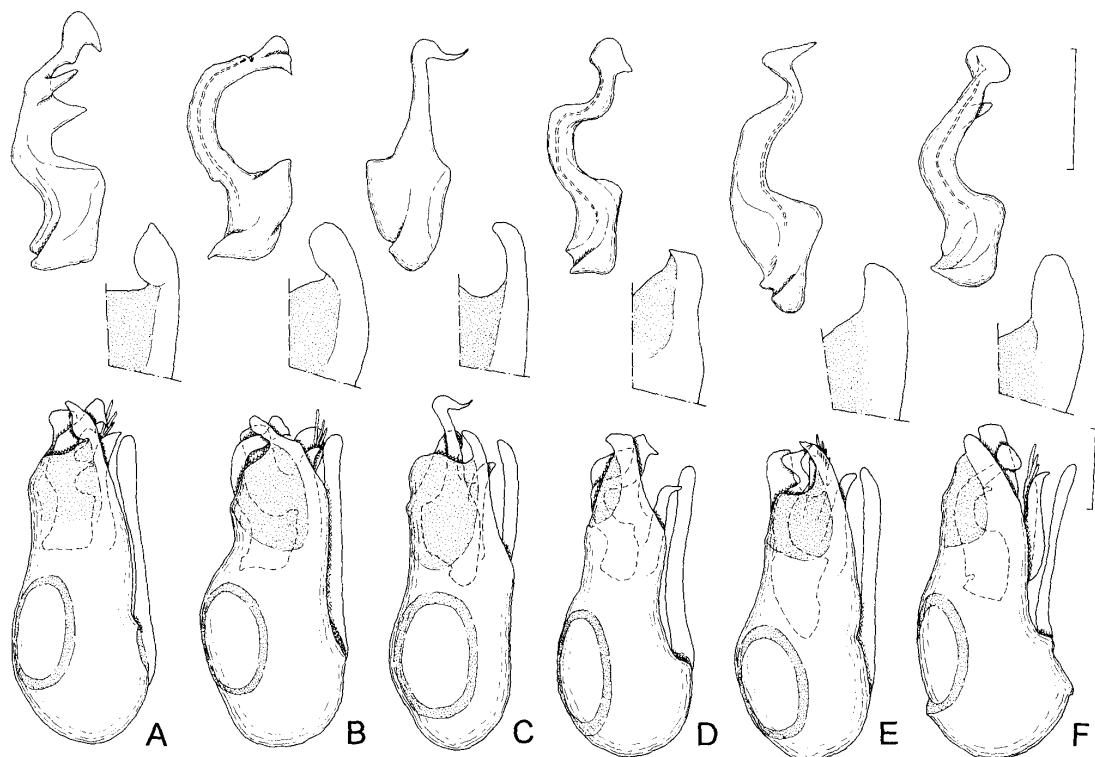


Fig. 3. Male genitalia of *Pselaphogenius orientalis* Besuchet in some localities (above, endophallus; middle, left apex of median lobe in lateral view; below, median lobe and parameres in dorsolateral view). A, Amagi Pass, Shizuoka Pref.; B, Abe Pass, Shizuoka Pref.; C, Shirabiso Kôgen, Nagano Pref.; D, Gonbee Pass, Nagano Pref.; E, Hirayu Spa, Gifu Pref.; F, Mennoki Pass, Aichi Pref. Upper scale for above and middle: 0.2 mm; lower for below: 0.2 mm.

similar to that of the Abe Pass population, the apical part of the endophallus is distinctly characterized by the crane-head shape in the Shirabiso-Kôgen population, Kami-mura, Nagano Prefecture.

In the specimens from the middle and northern parts of Nagano Prefecture, the left process is broad and nearly truncate at the apex; the endophallus looks like a crane head in the shape of the apex as that in the Shirabiso-Kôgen specimens, but reverse S-shaped at the apical part. In the specimens from the Mennoki Pass, Aichi Prefecture at the westernmost part of the distributional range, the left process is rounded at the apex, the endophallus is elongate, strongly broadened and rounded at the apex, and bears a dull denticule on the ventral side.

*Specimens examined.* [Fukushima Pref.] 2 males, 2 females, Sannô Pass, 900m alt., Tajima-machi, 12. x. 1997, S. Nomura leg.; 1 male, Takasuke, 450m alt., Tsuryû, Nishigô-mura, 30. vii. 1989, E. Terazawa leg.; 1 male, Manako, 640m alt., Habuto, Nishigô-mura, 30. vii. 1989, E. Terazawa leg.; 1 male, Ôuchi, 660m alt., Shimogô-mura,, 30. vii. 1989, E. Terazawa leg.; 1 male, Matsuzaka Pass, 660m alt., Tadami-machi, 30. vii. 1989, E. Terazawa leg. [Tochigi Pref.] 1 male, 1 female, Maruyama, 1,270m, alt., Chûzenji lakeside, Nikko-shi, 13. ix. 1997, SAST leg.; 2 males, 1 female, Urushino-sawa, 1,000m alt., Kawamata, Kuriyama-mura, 12. x. 1997, S. Nomura leg.; 1 male, Tashiro-rindô, 1,220m alt., Kuriyama-mura, 25. ix. 1995, SAST leg.; 1 male, 5 females, Mochigase, 640m, alt., Ashio-machi, 18. x. 1997, SAST leg.; 1 male, 1 female, Mt. Mae-Kesamaruyama, 1,840m alt., Ashio-machi, 19. x.

1997, SAST leg.; 1 male, Mt. Komaruyama, W-slope, 1,620m alt., Ashio-machi, 19. x. 1997, SAST leg.; 1 female, Kurasawa, 870m alt., Uchinokago, Ashio-machi, 4. x. 1997, SAST leg.; 2 males, 3 females, Matsudagawa, 340m alt., Ashikaga-shi, 12. vii. 1997, SAST leg.; 1 male, Jōinji, 225m alt., Ashikaga-shi, 12. vii. 1997, SAST leg.; 2 males, 2 females, Nagusa, 440m alt., Ashikaga-shi, 12. vii. 1997, SAST leg.; 2 males, 1 female, Mt. Yamizosan, (ca. 800m), Kurobane-machi, 15. x. 1994, SAST leg.; 1 male, Hōraiyma-jinja, 350m alt., Tanuma-machi, 13. vii. 1997, SAST leg.; 1 male, 1 female, Tobikoma, 280m alt., Tanuma-machi, 13. vii. 1995, SAST leg.; 1 male, Kiurazawa-rindō, 910m alt., Ôniba, Kuzuu-machi, 13. vii. 1995, SAST leg. [Ibaraki Pref.] 1 male, 8 females, Mt. Tatsuwaresan, (ca. 600m), 14. v. 1983, S. Tanaka leg.; 2 males, 5 females, Mt. Tsukubasan, (ca. 800m), 9. v. 1983, S. Tanaka leg. [Gunma Pref.] 1 male, 2 females, Pk. Komagatake, (ca. 1,500m alt.), Mt. Akagi-yama, 20. vii. 1996, S. Nomura leg.; 1 male, Kiryū-dam, (ca. 300m alt.), Kiryū-shi, 15. x. 1989, K. Baba leg.; 1 male, 2 females, nr. Pk. Harunafuji, 1,150m alt., Mt. Harunasan, Haruna-machi, 4. v. 2001, S. Nomura leg.; 1 male, 1 female, Higashizawa, (ca. 700m alt.), Otobuzawa, Ueno-mura, 5. v. 1979, Y. Nishikawa leg. [Saitama Pref.] 2 males, Mikuni Pass, 1,450m alt., Ohtaki-mura, 30. x. 1999, S. Nomura leg.; 4 males, 3 females, Kiyotaki, 1,250m alt., Mt. Ryōkamiyama, Ryōkami-mura, 10. v. 1997, T. Kishimoto leg.; 2 males, Hashidate, (ca. 400m alt.), Chichibu-shi, 30. vii. 2000, S. Arai leg.; 1 male, Kakkaku, (ca. 300m alt.), Ogano-machi, 4. v. 1989, T. Nambu leg. [Tokyo Metropolis] 5 males, 4 females, Mt. Takaosan, 400m, Hachiōji-shi, 16. xii. 1996, K. Nakata leg.; 1 male, same locality as above, but 550m alt., 13. x. 1997, S. Yoshida leg. [Kanagawa Pref.] 2 males, 3 females, Mt. Ôyama, 1,150–1,200m alt., Hadano-shi, 19. x. 2000, S. Nomura & S. Arai leg.; 2 males, Fudakake, 420m alt., Hadano-shi, 19. x. 2000, S. Nomura leg.; 5 males, Inukoeji, 650m alt., Yamakita-machi, 18. x. 2000, S. Nomura leg. [Yamanashi Pref.] 1 male, 2 females, Sanjōzawa, (ca. 1,100m alt.), Tabayama-mura, 15. ix. 2000, S. Arai leg.; 1 male, 1 female, Aoki-kōsen, (ca. 1,100m alt.), Nirasaki-shi, 16. vii. 1984, S. Nomura leg.; 1 male, Misaka Pass, 1,500m alt., Kawaguchiko-machi, 24. x. 1999, S. Nomura leg.; 4 males, 2 females, Hirogawara, (ca. 1,500m alt.), Ashiyasu-mura, 20–21. viii. 1987, S. Nomura leg.; 1 male, Mt. Genjiyama, (ca. 1,100m alt.), Masuho-chō, 23. v. 2000, S. Hatsushiba & T. Kishimoto leg. [Shizuoka Pref.] 1 male, Kannami-Genseirin, (ca. 500m alt.), Kannami-chō, 29. iv. 2000, H. Mizushima leg.; 1 male, Amagi Pass, (ca. 800m alt.), Izu Peninsula, 17. x. 1982, N. Haraki leg.; 4 males, Abe Pass, 1,530m alt., Shizuoka-shi, 13. viii. 1998, S. Nomura leg.; 3 males, Mt. Yamabushi, 1,900–2,000m alt., Shizuoka-shi, 13. viii. 1998, S. Nomura leg.; 2 males, 2 females, Mt. Yamainudan–Mt. Sobatsubuyama, 1,450m alt., Honkawane-chō, 14. viii. 1998, S. Nomura leg. [Nagano Pref.] 1 male, Takeshimine, (ca. 1,900m alt.), Matsumoto-shi, 24. vii. 1997, Y. Furihata leg.; 1 male, 1 female, Akazawa, (ca. 1,100m alt.), Agematsu-machi, 24. v. 1999, H. Mizushima leg.; 2 males, Gonbee Pass, (ca. 1,500m alt.), Minami-Minowa-mura, 23. v. 1999, H. Mizushima leg.; 1 male, Shiokawa, (ca. 1,500m alt.), Ohshikamura, 8. xi. 1998, S. Nomura leg.; 2 males, 2 females, Shirabiso-kōgen, 1,900m alt., Kami-mura, 16. xi. 1999, S. Nomura leg.; 1 male, 1 female, Shirabiso Pass, (ca. 1,800m alt.), 8. ix. 1998, O. Furuta leg.; 2 males, Seinaiji Pass, 1,200m alt., Nagiso-machi, 15. xi. 1999, S. Nomura leg.; 2 males, Hyōgoe Pass, 1,100m alt., Minami-Shinano-mura, 16. xi. 1999, S. Nomura leg. [Gifu Pref.] 5 males, 1 female, Hirayu Spa, (ca. 1,300m alt.), 24. viii. 1987, S. Nomura leg. [Aichi Pref.] 1 male, 4 females, Dando-Uradani, 930m alt., Shitara-chō, 5. x. 1998, S. Nomura leg.; 6 males, 6 females, Mennoki Pass, (ca. 1,100m alt.), Inabu-chō, 13. viii. 1990, S. Nomura leg.

*Records in literature.* Yotokigawa, (ca. 300m alt.), Iwaki-shi, Fukushima Pref.; Akane, Haramachi-shi, Fukushima Pref.; Kido, (ca. 300m alt.), Naraha-machi, Fukushima Pref.; Suketsune-

rindô, (ca. 500m alt.) Iitate-mura, Fukushima Pref.; Hanazono Valley, (ca. 600m), Ibaraki Pref.; Mt. Yamizosan, (ca. 1,000m alt.), Ibaraki Pref.; Mt. Nantaizan (ca. 500m alt.), Daigo-machi, Ibaraki Pref. (Nomura, 1996).

*Distribution.* Eastern Honshu (from Tôhoku to Chûbu districts).

*Remarks.* This species is distinctive in having the median lobe of the male genitalia with a pair of well projected lateral processes. It is easily distinguished from the congeners from Tôhoku to Chûbu districts by the large and U-shaped notch and well demarcated longitudinal groove on the frons in both sexes.

The geographical variation of this species represented in the male genitalia is remarkable. On the basis of the examination and comparison of the local populations, it is concluded that *P. uncifer* Tanokuchi described from Marunuma, Gunma Prefecture is a geographical variant of this species.

***Pselaphogenius katsuyukii* sp. nov.**

[Japanese name: Takao-higenaga-arizukamushi]

*Male.* Length 1.54–1.63 mm. Width 0.63–0.65 mm. Body reddish to dark brown, tarsi and maxillary palpi light brown, strongly narrowed in head and pronotum.

Head longer than wide, constricted just behind antennae, frons gently convex and broadened laterally, with a short and U-shaped notch on anterior margin and indistinct broad longitudinal groove, vertex slightly convex with a pair of large and round dorsal tentorial pits just inside eyes, shallow and ovoid longitudinal concavity behind pits, genae roundly expanded just before eyes, postgenae broad, gently rounded. Eyes small and ovoid, each composed of 8–9 facets. Antennae elongate, reaching hind margin of pronotum, 1st segment long and thick, about twice as long as wide, 2nd subcylindrical, slightly longer than wide, 3rd to 8th subequal in width, narrower than 2nd, each nearly ovoid, slightly longer than wide, narrowed basally, 8th to 9th subequal, each large and ovoid, longer than wide, 11th largest, ovoid, twice as long as wide; relative length (width) of each segment from base to apex: 1.2 (0.6): 0.6 (0.4): 0.5 (0.3): 0.4 (0.3): 0.5 (0.3): 0.5 (0.3): 0.4 (0.3): 0.7 (0.5): 0.7 (0.5): 1.6 (0.8). Maxillary palpi very long and slender, each slightly shorter than antenna, 1st segment short and tubular, 2nd long and slender, thickened in apical 1/4, 3rd very short and triangular, 4th largest, about as long as 1st + 2nd + 3rd, thickened at basal 1/6, very slender from basal 1/6 to apical 1/4, then strongly swollen in apical 1/4, with a broad and shallow groove and 2 setae at apex, palpal spine short and slender, slightly longer than apical seta of 4th.

Pronotum slightly shorter than head, about as long as wide, roundly expanded on lateral sides, smooth and almost glabrous on dorsal surface, with a small basi-median and a pair of basi-lateral foveae, and with punctuated and indistinct antebasal sulcus. Elytra nearly triangular, strongly narrowed anteriad, weakly convex on dorsal surface, shallowly depressed along suture, each elytron densely covered with leaf-shaped scales on posterior margin, with a large and deep basal fovea, a weak adsutural sulcus and a broad median longitudinal carina, adsutural, median and lateral rows of setae each consisting of a single line of setae, lateral area with several setae. Legs slender, femora each thickened medially, tibiae slender, each weakly thickened distad, tarsi very slender.

Abdomen larger than elytra, widest at posterior part of 4th segment, smooth on dorsal surface, 4th tergite very broad, rectangular, with a deep transverse groove near base, densely covered with leaf-shaped scales on basal groove, almost glabrous in median part, paratergites broad, each weakly

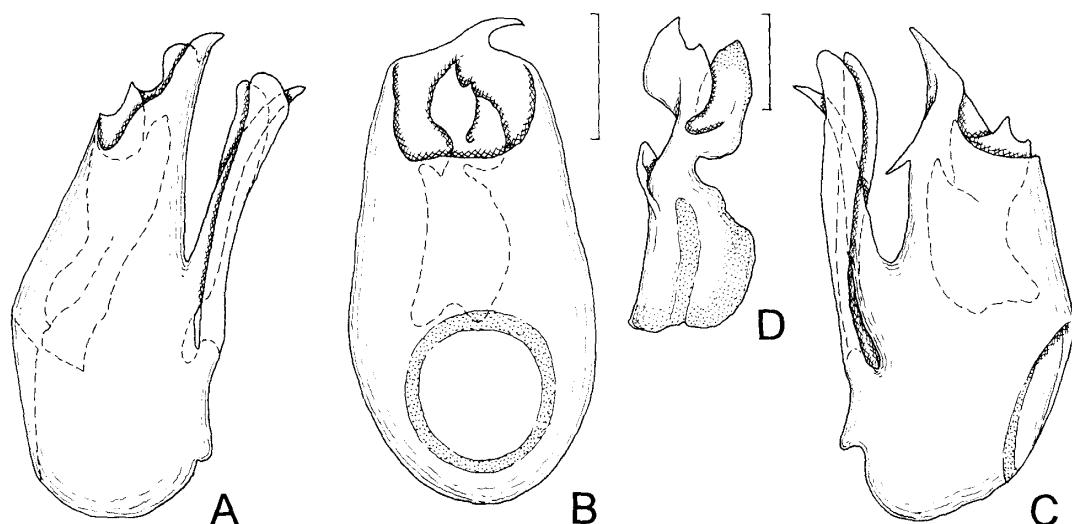


Fig. 4. Male genitalia of *Pselaphogenius katsuyukii* sp. nov. A, median lobe and parameres in lateral view (left); B, ditto, dorsal view; C, ditto, lateral view (right); D, endophallus. Left scale for A–C: 0.2 mm; right for D: 0.1 mm.

broadened distad, 5th to 6th subequal in length, each very short, 7th longer than 6th, transverse, 8th short and trapezoidal.

Male genitalia well sclerotized and ovoid in dorsal view; parameres symmetrical, each long, elongate and slightly broadened distad; median lobe bulbous in basal part, with an acute spine turned leftwards at apex, small spine on right ventral side, large ventral process and an ovoid membranous part; endophallus broad and short, strongly constricted near the middle, bilobate in apical part.

*Female*. Length 1.51–1.55 mm. Width 0.64–0.65 mm.

Holotype, male (preserved in National Science Museum, Tokyo), Mt. Takaosan, 400m alt., Hachiōji-shi, Tokyo Metropolis, 16. xii. 1996, K. Nakata leg. Paratypes. 4 males, 2 females, same data as holotype.

*Distribution*. Honshu (Kantō district).

*Remarks*. This new species is collected only from Mt. Takaosan, Tokyo Metropolis. It is characterized by the head with a short and U-shaped frontal notch and by the median lobe of the male genitalia with an acute and left-turned spine at apex.

*Pselaphogenius tridentatus* K. Sawada  
[Japanese name: Takane-higenaga-arizukamushi]

*Pselaphogenius tridentatus* K. Sawada, 1969, Kontyû, Tokyo, 37: 4; Nomura, 1989, Check List Jpn. Ins., Fukuoka, [1]: 292; Besuchet, 1999, Revue suisse Zool., 106: 62.

*Remarks*. This species is very similar to the other congeners in appearance, but is separated by the very short and V-shaped notch at the middle of frontal margin and very narrow or indistinct longitudinal groove on the frons. It is also characterized by the apical part of median lobe of the male genitalia with less projected right and left lateral processes than in *P. orientalis*, and hook-like spines on the processes.

Distributional range of this species is restricted to high mountains over 1,000m altitude with the

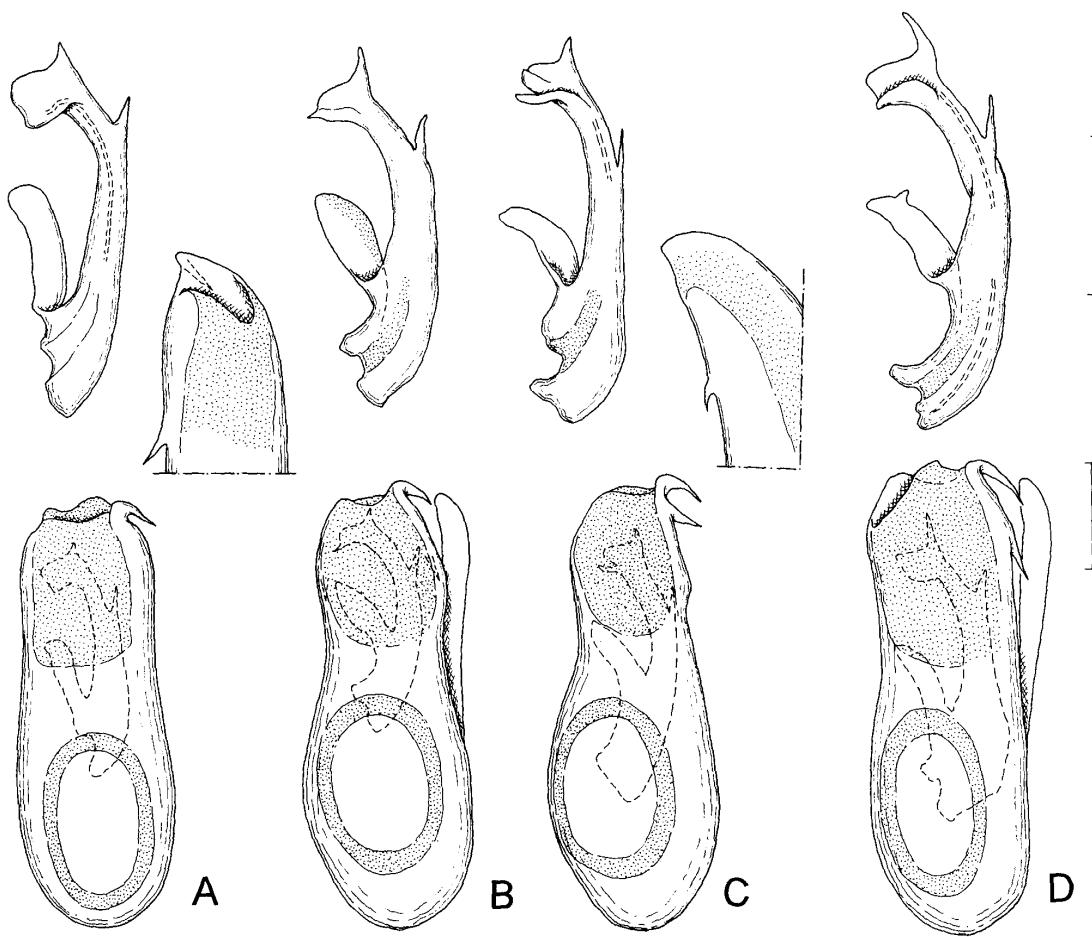


Fig. 5. Male genitalia of *Pselaphogenius tridentatus tridentatus* K. Sawada in some localities (above, endophallus; middle, left apex of median lobe in lateral view; below, median lobe and parameres in dorsolateral view). A, Oze, Gunma Pref.; B, Mt. Tsukiyomiyama, Tokyo Metropolis; C, Mt. Fuji, Shizuoka Pref.; D, Ame-ike, Yamanashi Pref. Upper scale for above and middle: 0.2 mm; lower for below: 0.2 mm.

exceptions of a few cases.

#### *Pselaphogenius tridentatus tridentatus* K. Sawada

**Male.** Length 1.51–1.70 mm. Width 0.65–0.73 mm. Head elongate, constricted just behind antennae, frons weakly convex, with very small V-shaped notch at the middle of anterior margin, and with an indistinct, very narrow longitudinal groove, vertex slightly convex, with a pair of small and round dorsal tentorial pits just behind eyes, and shallow concavity around pits.

Male genitalia elongate and bulbous in basal part; parameres nearly symmetrical, each slender and lamellar; median lobe with less projected left and right lateral processes near apex than in *P. orientalis*, left process hook-like at apex with or without small spine just behind the apical hook, right process indistinct in many cases with a very small spine on basi-ventral side; endophallus very long and elongate, bifurcate near base, then weakly narrowed distad and broadened near apex with 3 to 4 denticles at apex.

**Female.** Length 1.60–1.65 mm. Width 0.70–0.71 mm.

*Geographical variation.* In the specimens from a large area including Oze, Nikkō, Joh-Shin-Etsu, Yatsugatake, Kantō Mts. and Mt. Fuji, shapes of the endophallus and the apical part of median lobe are similar to one another. The endophallus in the Izu Peninsula population is characterized by very large and rounded basal branch and orchid-like apical part. Additionally, it is very slender and sharply tridenticulate near the apex in the populations at the westernmost part of the distributional range, Mt. Ibukiyama, Shiga Prefecture.

*Specimens examined.* [Fukushima Pref.] 1 male, Kouzo-daira, Hinoemata-mura, 26. vii. 1996, S. Naomi leg. [Niigata Pref.] 1 male, Mikuni Pass, 1,100m alt., Yuzawa-machi, 20. vii. 1996, S. Nomura leg. [Tochigi Pref.] 1 male, Yumoto, (ca. 1,500m alt.), Nikkō-shi, 23. vii. 1985, S. Nomura leg.; 2 females, Konsei Pass, 2,000m alt., Nikkō-shi, 13. ix. 1997, SAST leg.; 1 male, Mt. Sotoyama, 2,130m alt., Yumoto, Nikkō-shi, 13. ix. 1997, SAST leg.; 3 females, Chanoki-daira, (ca. 1,600m alt.), Chūzenji lakeside, Nikkō-shi, 24. vii. 1985, S. Nomura leg.; 1 male, Mt. Tarōsan, Nikkō-shi, 25. x. 1985, K. Furuno leg.; 1 male, 1 female, Mt. Akanagiyama, 1,915m alt., Nikkō-shi, 21. ix. 1996, SAST leg.; 1 male, 2 females, same locality as above, but 1,830m alt., 21. ix. 1996, SAST leg.; 1 male, 1 female, same locality as above, but, 1,670m alt., 21. ix. 1996, SAST leg.; 1 male, Shizu, 1,800m alt., Mt. Nantaizan, Nikkō-shi, 9. xi. 1996, SAST leg.; 1 female, Shizu-rindō, 1,720m alt., Mt. Nantaizan, Nikkō-shi, 9. xi. 1996, SAST leg.; 1 female, Mt. Nantaizan, N-slope, 2,030m alt., Nikkō-shi, 15. vi. 1997, SAST leg.; 1 male, Umatate-shita, 1,720m, Mt. Nyohōsan, Nikkō-shi, 14. vi. 1997, SAST leg.; 1 male, Kinunuma-shita, 1,980m alt., Kuriyama-mura, 30. vii. 1995, SAST leg.; 1 male, Sannou-rindō Kisen, 1,060m alt., Kuriyama-mura, 10. ix. 1995, SAST leg.; 2 males, 1 female, Mt. Kesamaruyama, Ashio-machi, 15. xi. 1986, K. Furuno leg.; 1 female, Mt. Mae-Kesamaruyama, 1,878m alt., Ashio-machi, 19. x. 1997, SAST leg.; 2 males, 4 females, same locality as above, but 1,840m alt., 19. x. 1997, SAST leg.; 4 females, Mt. Mae-Kesamaruyama-Mt. Komaruyama, 1,670m alt., Ashio-machi, 19. x. 1997, SAST leg.; 1 male, 2 females, Mt. Komaruyama, 1,676m alt., Ashio-machi, 19. x. 1997, SAST leg.; 1 female, Mt. Komaruyama, S-slope, 1,600m alt., Ashio-machi, 19. x. 1997, SAST leg.; 1 male, Saino-Kawara N, 1,607m alt., Ashio-machi, 19. x. 1997, SAST leg. [Gunma Pref.] 1 male, Hatomachi Pass-Yamanohana, 1,500m alt., Oze moor, Katashina-mura, 22. x. 1994, Y. Hagino leg.; 1 male, Ozegahara, 1,450m alt., Oze moor, Katashina-mura, 23. x. 1994, Y. Hagino leg. [Saitama Pref.] 5 males, 4 females, Sumiyaki-daira, 1,250m, Mt. Mitsuminesan, Ohtaki-mura, 29. iv. 2001, S. Arai leg. [Tokyo Metropolis] 2 males, 3 females, Mt. Tsukiyomiyama, 1,000m alt., Hinohara-mura, 17. xi. 1999, S. Nomura leg. [Kanagawa Pref.] 1 male, Kamiyu, 700m alt., Hakone-machi, 24. vii. 2000, T. Shimada leg.; 1 male, 1 female, Mt. Daigatake, 1,000m alt., Hakone-machi, 3. iii. 2001, H. Mizushima leg. [Shizuoka Pref.] 2 males, Shin-4-gōme, 2,200m alt., Mt. Fuji, 8. vi. 1996, S. Nomura leg.; 1 male, nr. Pk. Manzaburō-dake, 1,100m alt., Mt. Amagisan, Nakaizu-chō, 12. xi. 2000, S. Nomura leg.; 12 males, 9 females, Amagi Pass, (ca. 800m alt.), Amagi-Yugashima-chō, 20. x. 2000, S. Nomura leg. [Nagano Pref.] 1 male, 1 female, Shiga-kōgen, 3. vi. 1968, K. Ishikawa leg.; 1 male, Kitayama, 1,800m alt., Mt. Yatsugatake, Chino-shi, 19. viii. 1996, S. Nomura leg.; 2 males, 1 female, Ameike, 2,050m alt., Mt. Yatsugatake, Yachiho-mura, 19. viii. 1996, S. Nomura leg. [Shiga Pref.] 1 male, Mt. Ibukiyama, 1,300m alt., Ibuki-chō, 5. vi. 1997, S. Nomura leg.

*Records in literature.* Enna-douro, 1,670m alt., Kuroiso-shi, Tochigi Pref.; Mt. Shikanomatadake, 1,760m alt., Enna-douro, Kuroiso-shi, Tochigi Pref. (Nomura, 1996). Marunuma (ca. 1,500m), Gunma Pref.; Otanomousu-taira, 1,750m alt., Tōhoku-kōgen, Nagano Pref. (Sawada, 1969).

*Distribution.* Central Honshu (from Kanto to Kinki districts).

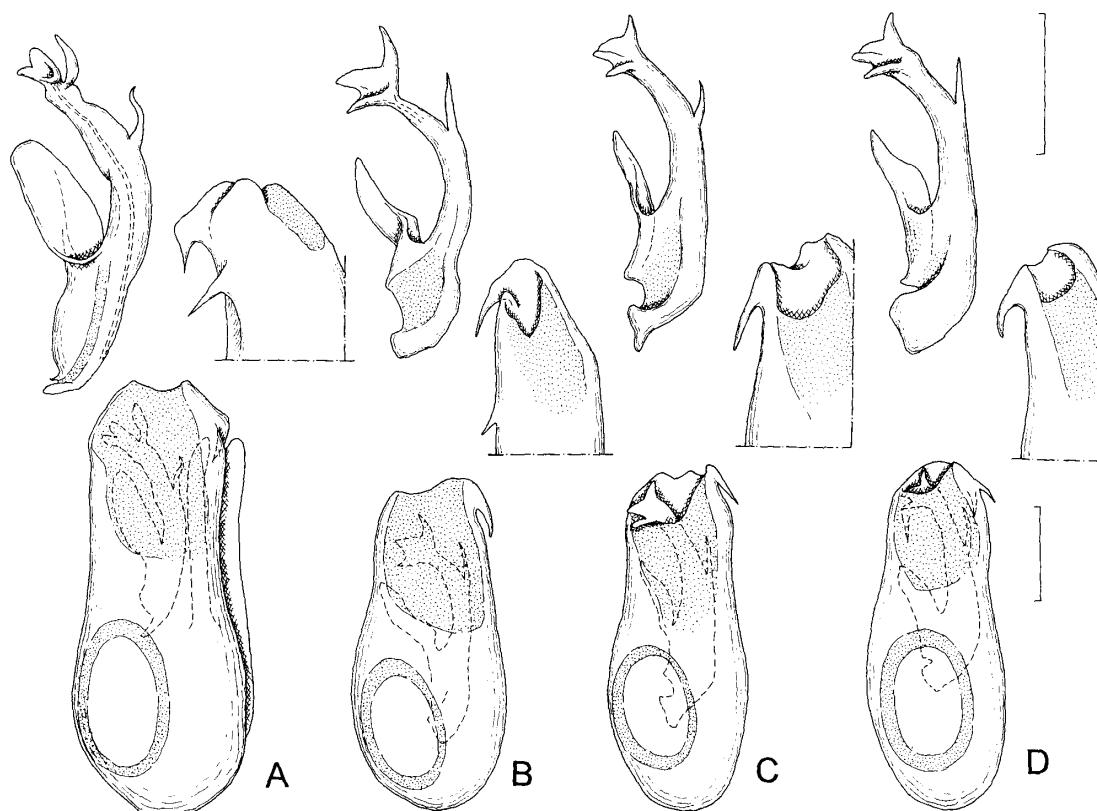


Fig. 6. Male genitalia of *Pselaphogenius tridentatus* K. Sawada in some localities (above, endophallus; middle, left apex of median lobe in lateral view; below, median lobe and parameres in dorsolateral view). A–B, *P. t. tridentatus* K. Sawada; C–D, *P. t. vicinus* K. Sawada. A, Pk. Manzaburôdake, Shizuoka Pref.; B, Mt. Ibukiyama, Shiga Pref.; C, Mt. Hakusan, Ishikawa Pref.; D, Yashagaike, Fukui Pref. Upper scale for above and middle: 0.2 mm; lower for below: 0.2 mm.

*Remarks.* The nominotypical subspecies is characterized by the less projected and unhooked right lateral process of median lobe of the male genitalia as compared with subsp. *vicinus*.

#### *Pselaphogenius tridentatus vicinus* K. Sawada

*Pselaphogenius tridentatus vicinus* K. Sawada, 1969, Kontyû, Tokyo, 37: 6; Nomura, 1989, Check List Jpn. Ins., Fukuoka, [1]: 292; Besuchet, 1999, Revue suisse Zool., 106: 62.

*Male.* Length 1.50–1.59 mm. Width 0.63–0.69 mm. Very similar to the nominotypical subspecies, but this subspecies is distinguishable by the following characters: head longer than wide, frons densely punctate, without distinct groove, vertex gently convex, with indistinct and very shallow concavity around dorsal tentorial pits.

Male genitalia similar to those of the nominotypical subspecies, but the right lateral process of the median lobe is clearly projected and hook-shaped.

*Female.* Length 1.44–1.55 mm. Width 0.60–0.64 mm. Indistinguishable from the nominotypical subspecies in external morphology.

*Specimens examined.* [Ishikawa Pref.] 1 male, 1 female, Mt. Rokumansan, Shiramine-mura, 9. viii. 1993, K. Nakata leg.; 2 males, 1 female, same data as above, but 15. ix. 1993; 2 males, same data

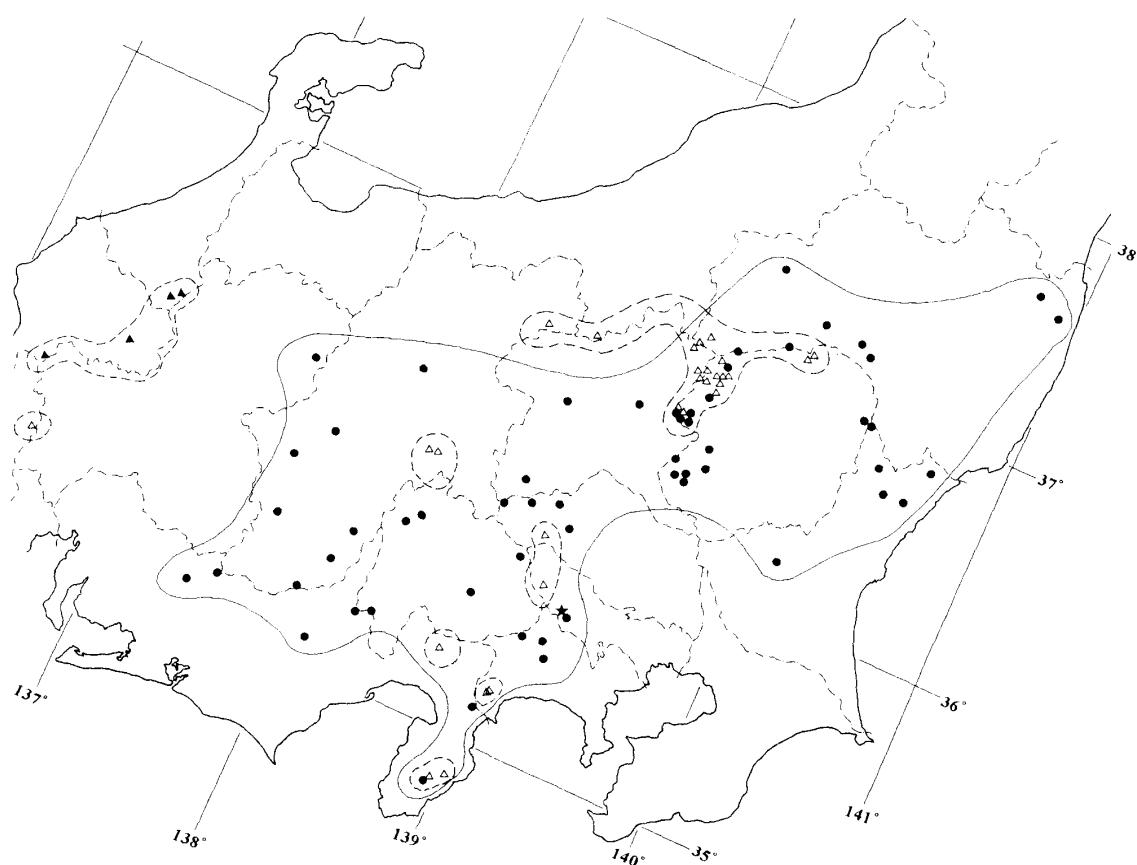


Fig. 7. Distribution map of *Pselaphogenius* spp. ●, *P. orientalis* Besuchet; ★, *P. katsuyukii* sp. nov.; △, *P. tridentatus tridentatus* K. Sawada; ▲, *P. t. vicinus* K. Sawada. Narrow solid line demarcates possible distributional range of *P. orientalis* Besuchet; broken line shows that of *P. tridentatus*.

as above, but 16. x. 1993; 2 males, 1 female, same data as above, but 14. v. 1994; 1 male, 1 female, same data as above, but 11. vi. 1994; 1 male, 1 female, Mt. Hakusan, 1,750m alt., Shiramine-mura, 28. viii. 1993, K. Nakata leg.; 2 females, same data as above, but 1,610m alt.; 2 males, 2 females, same data as above, but 1,570m alt.; 3 males, 1 female, same data as above, but 4. vii. 1993; 1 male, 2 females, same data as above, but 1,550m alt.; 1 male, 1 female, same data as above, but 1,200m alt., 10. xi. 1994. [Fukui Pref.] 1 male, Yashagaike, (ca. 1,000m alt.), Imajô-chô, 9. viii. 1990, S. Nomura leg.

*Record in literature.* Mt. Arashimadake, Fukui Pref. (Sawada, 1969).

*Distribution.* Central Honshu (Hokuriku district).

*Remarks.* The variant collected from Mt. Arashimadake, Fukui Prefecture has been separated as a subspecies, *P. t. vicinus* K. Sawada by having large hook on the right lateral process of median lobe of the male genitalia. This subspecies also occurs at Yashagaike, Fukui Prefecture and Mt. Hakusan, Ishikawa Prefecture. Its distributional range is restricted to a small area in Hokuriku district.

#### Biogeographical Notes

The vertical distributions of the three species are shown in Fig. 8, in which inferred altitude

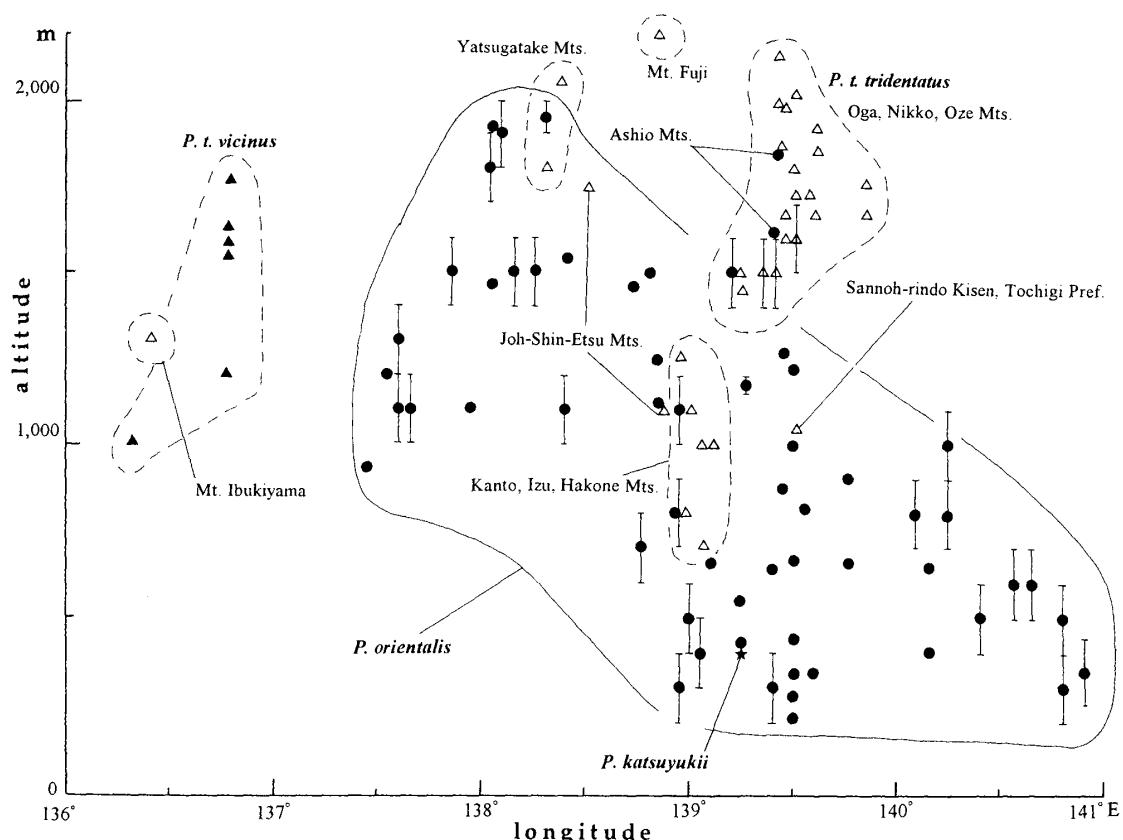


Fig. 8 Vertical distribution of *Pselaphogenius* spp. ●, *P. orientalis* Besuchet; ★, *P. katsuyukii* sp. nov.; △, *P. tridentatus tridentatus* K. Sawada; ▲, *P. t. vicinus* K. Sawada. Narrow solid line demarcates possible distributional range of *P. orientalis* Besuchet; broken lines show those of *P. tridentatus* K. Sawada.

(parenthesized) of the collecting sites are marked with vertical range  $\pm 50$  m. From the figure, the following points can be suggested. First, the vertical distributional range of *P. orientalis* is continuous and has an apparent cline from east to west. In the eastern part of the range, the collecting sites are distributed from 200 to 1,200 m in altitude, and in the western part, it occurs from 800 to 2,000 m. Exceptionally, on the Ashio Mts., *P. orientalis* is distributed in high altitude at the same level as *P. tridentatus tridentatus*.

Second, the distributional range of *P. tridentatus tridentatus* is restricted within some areas. In the eastern part like Oga, Nikkô, Oze and the Ashio Mts., the vertical range of the distributional areas is very high (1,500–2,200 m alt.). In contrast, it is low (700–1,200 m) in Kantô, Izu and the Hakone Mts. In the low part, the vertical range completely overlaps with that of *P. orientalis*. In the westernmost part of the distributional ranges of *P. t. tridentatus* and *P. t. vicinus*, the vertical range (1,000–1,800 m alt.) is almost the same as that of *P. orientalis*.

In conclusion, *P. t. tridentatus* is segregated from *P. orientalis* in the eastern part of their distributions except for a few localities of Nikkô and the Ashio Mts. The vertical ranges of these two species overlap in the western part.

## 要 約

日本産アラメヒゲナガアリヅカムシ属 *Pselaphogenius* に関する分類学的再検討の第3部として、東北地方南部から中部地方に至る本州中部に産する種について検討した。群馬県丸沼から記載された *P. uncifer* Tanokuchi カギヒゲナガアリヅカムシは、静岡県三島市山中から知られる *P. orientalis* Besuchet のシノニムとすべき事が判明した。*P. tridentatus* K. Sawada タカネヒゲナガアリヅカムシ（和名新称）は尾瀬日光山地から滋賀県伊吹山にかけての標高1,000m以上の山地に分布し、白山周辺のものは北陸亜種 *P. t. vicinus* K. Sawada に分けられる。また、東京都高尾山から1新種 *P. katsuyukii* タカオヒゲナガアリヅカムシを記載した。この結果、本州中部の種は3種1亜種に整理された。

カギヒゲナガアリヅカムシとタカネヒゲナガアリヅカムシは、水平分布の上では分布域がオーバーラップしているが、標高で見ると、分布域の東部ではわずかな例外を除いて、タカネが高所、カギがより低い部分に分布するすみ分けが観察される。しかし分布域の西部ではタカネの分布高度は断続的になり、カギの分布高度とほぼ完全に重複していることが明らかになった。

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